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and stop the door at the full upmost position, unless a control is actuated or an inherent entrapment protection circuit senses an obstruction to stop the door during its upward travel, if the lower limiting device is not actuated in 30 seconds or less following the initiation of the close cycle. If the door is stopped manually during its descent, the 30 seconds may be measured from the resumption of the close cycle.

(g) To determine whether an operator complies with the requirement in paragraph (f) of this section, an operator is to be subjected to 10 open-and-close cycles of operation while connected to the door or doors specified in paragraphs (c) and (e) of this section. The cycles of operation while connected to the door or doors need not be consecutive; that is, there may be any number of motor cooling-off periods during the test. The means provided to comply with the requirement in paragraph (a) of this section and §1211.8(a) are to be inoperative or defeated during the test. An obstructing object is to be provided so that the door cannot activate a lower limiting device.

§1211.8 External entrapment protection requirements.

(a) An external entrapment protection device provided with or as an accessory to an operator shall consist of either:

(1) A photoeletric sensor that when activated causes an operator closing a door to reverse direction of the door and prevents an operator from closing an open door,

(2) An edge sensor installed on the edge of the door that when activated causes an operator closing a door to reverse direction of the door and prevents an operator from closing an open door, or

(3) Any other device that provides entrapment protection equivalent to paragraphs (a) (1) or (2) of this section.

(b) With respect to the device mentioned in paragraph (a) of this section, a door operator shall monitor for the presence and correct operation of the device, including the wiring to it, at least once during each close cycle. Should the device not be present or a fault condition occur which precludes the sensing of an obstruction, including an open or short circuit in the wiring that connects the external entrapment protection device to the operator and device's supply source, the operator shall function in one of the following conditions:

(1) A closing door shall open and an open door shall not close more than 1 foot (305 mm) below the upmost position, or

(2) The operator shall function as required by §1211.6(b)(1).

(c) An external entrapment protection device as mentioned in paragraph (a) of this section shall comply with the applicable requirements specified in §§1211.10, 1211.11, and 1211.12 of this subpart.

§1211.9 Additional entrapment protection requirements.

(a) A means to manually detach the door operator from the door shall be provided. The means shall be colored red and shall be easily distinguishable from the rest of the operator. It shall be capable of being adjusted to a height of 6 feet (1.8 m) above the garage floor when the operator is installed according to the instructions specified in §1211.13(a)(2) of this subpart. The means shall be constructed so that a hand can firmly grip it and detach the operator by applying a maximum of 50 pounds (223 N) of force to the means with the door obstructed in the down position. The obstructing object, as described in §1211.7(b), is to be located in several different positions. A marking with instructions for detaching the operator shall be provided as required by §1211.14(i).

(b) Actuation of a control that initiates movement of a door shall stop and may reverse the door on the down cycle. On the up cycle, actuation of a control shall stop the door but not reverse it.

(c) An operator shall be constructed so that adjustment of limit, force or other user controls and connection of external entrapment protection devices can be accomplished without exposing normally enclosed live parts or wiring.

§1211.10 Requirements for all entrapment protection devices.

(a) *General requirements.* (1) An external entrapment protection device shall